

Remarks

Claims 1 and 9 are amended to specify that the amount of starch and fiber in the mixture is by weight. This amendment is supported in the Specification, including at ¶ 5 and in Claim 6 which addresses the starch and fiber mixture applied to a paper mat as having starch and fiber content by weight. Thus, these amendments to Claims 1 and 9 do not add new matter.

Claims 1 and 6 are amended to specify that the starch in the starch and fiber mixture is uncooked, and that the starch and fiber mixture is applied to a paper mat during the paper making process with the fiber allowing the starch to remain on the paper mat and the starch is cooked during the paper making process. These amendments to Claims 1 and 6 are supported in the Specification at ¶ 4 and ¶ 6 where it is stated that the starch and fiber mixture is sprayed onto the paper mat and the fiber allows the starch to remain on the mat where it is cooked during further processing.

The limitations of Claims 10 and 12 are written into Claim 9. Claim 10 is dependent from Claim 9, and Claim 12 is dependent from Claim 10. Claims 10 and 12 are, accordingly, canceled. This amendment is made without prejudice to the Applicants' rights to assert the original amendment subject matter of Claim 9, and any claims dependent therefrom, in a continuation application. Claims 11, 13 and 14, which were dependent from Claim 12, are amended to recite dependency from Claim 9. Claim 15, which was dependent from Claim 10, is

amended to recite dependency from Claim 9. These amendments to Claims 9, 11 and 13-15 do not add new matter.

Claim 18 is amended to recite that the starch in the starch and fiber mixture is uncooked and the starch and fiber mixture allows the starch to remain on the paper mat where it is cooked during the paper making process. These amendments to Claim 18 are supported in the Specification at ¶ 4 and ¶ 6.

Claim 18 is also amended to recite that in the process for making a starch and fiber mixture, the mixture does not comprise flocculant. This amendment to Claim 18 is supported in the Specification at ¶ 24.

Claim 20 is amended to recite that the method involves filtering white water obtained from the formation of a paper mat on a wire screen, and that the method comprises filtering white water from the wire screen in a pressure screen. Support for these amendments to Claim 20 can be found in the Specification at ¶ 20 and in both drawings, Figures 1 and 2. In the method described in the Specification and shown in the drawings, white water, after collecting in a tray above the wire screen where the paper mat is formed on the wire screen is sent to a pressure screen which forms accepts and rejects.

At page 2 of the Office Action, the Examiner rejects Claims 1-17 under 35 U.S.C. § 112 (second paragraph) as being indefinite for failing to point out and distinctly claim the subject matter which the applicant regards as the invention. Reconsideration and withdrawal of this rejection is respectfully requested.

The Examiner states that Claims 1 and 9 are indefinite because they recite only the percentage of fiber and starch and are incomplete since the remaining portion of the mixture is unclear as to the basis for the percentage in the claims. Claims 1 and 9 are amended to recite that the amounts of starch and fiber are by weight, meaning that the amounts are by weight of all of the components in the mixture. As discussed in the Specification at ¶ 10, the mixture may further comprise water, additives and filler. As amended, Claims 1 and 9 distinctly claim the subject matter of the claimed invention because one skilled in the art would know that the by weight amounts set forth in the claims are based on all the components in the mixture. Accordingly, Claims 1 and 9, as amended, comply with the requirements of 35 U.S.C. § 112 (second paragraph).

The Examiner asserts that the limitation "further processing" in Claim 11 is incomplete. The limitation means that the starch and fiber mixture is applied to the paper mat after the paper mat is formed but before any other processing condition is applied to the paper mat. As discussed in the Specification, this allows the starch and fiber mixture to be applied to the paper mat before, for example, it is heated which serves to cook the starch. (See, Specification at ¶¶ 10-11.) Thus, Claim 11 particularly points out and distinctly claims the subject matter of the present invention and, hence, Claim 11 complies with the requirements of 35 U.S.C. § 112 (second paragraph).

The Examiner asserts that there is no antecedent basis in Claim 10 for the white water recited in Claim 12. As discussed above, the limitations of Claims 10

and 12 are written into Claim 9. As amended, Claim 9 recites that white water is formed when the pulp and process water is filtered through the paper mat, and the white water is removed from the wire screen and moved into a pressure screen that obtains accepts and rejects and the starch and fiber mixture comprises the accepts. Considering the cancellation of Claim 12, the rejection of this claim under 35 U.S.C. § 112 (second paragraph) is moot. In any event, Claim 9, as amended, complies with the requirements of 35 U.S.C. § 112 (second paragraph).

At page 5 of the Office Action, the Examiner indicates that Claims 12-14 would be allowable if rewritten to overcome the formal rejections and to include the limitations of the base claim and any intervening claims. The applicants gratefully acknowledge this indication of allowability. As discussed above, the limitations of Claims 10 and 12 are written into Claim 9, and Claim 9 is amended to overcome the formal rejections. Claims 11 and 13-17 depend from Claim 9. Thus, in accordance with the indication of allowability, a Notice of Allowance of Claims 9, 11 and 13-17 is earnestly solicited. Also, as discussed below, the other claims in the instant Application, as amended, are neither anticipated by nor obvious over the prior art and a Notice of Allowance of all the pending claims in the instant application is respectfully requested.

At pages 2-3 of the Office Action, the Examiner rejects Claims 1-11, 16 and 18 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,183,596 to Matsuda *et al.* ("Matsuda"), or, in the alternative, under 35 U.S.C. §

103(a) as being obvious over Matsuda. Reconsideration and withdrawal of this rejection is respectfully requested.

The Examiner asserts that Matsuda discloses coating paper either on a machine or off machine with a coating containing starch and supermicrofibrillated ("SMF") cellulose fiber, which, the Examiner states, is added for water retention value and thixotropic properties. The Examiner further argues that SMF has a length of 0.05 mm to 0.3 mm, and cites Example 5 of Matsuda which in the Examiner's estimation corresponds to 3.8% starch and 2.3% SMF. On this basis, the Examiner contends that the present invention is anticipated by or obvious over Matsuda. Regarding Claims 3, 4, and 8, the Examiner contends that the limitations of these claims do not render these claims patentable. The Examiner further asserts that, regarding Claim 11, the coating in Matsuda is applied before processing the coating; regarding Claim 16, Matsuda discloses size presses and, regarding Claim 18, the temperature range includes room temperature.

Initially, the rejection under Matsuda pertaining to Claims 1-8 and 18 shall be addressed. Claim 1, as amended, pertains to a starch and fiber mixture comprising 0.01% to about 2.0%, by weight, fiber and about 0.1% to about 20%, by weight, uncooked starch wherein the starch and fiber mixture is applied to a paper mat during the paper making process with the fiber allowing the starch to remain on the paper mat and the starch is cooked during the paper making process. Claims 2-5 are directly or indirectly dependent from Claim 1. Claim 6,

as amended, recites a paper mat comprising the same starch and fiber mixture as generally claimed in Claim 1, and Claims 7-8 are dependent from Claim 6. Claims 18 recites a process for making the starch and fiber mixture and, as amended, requires the starch to be uncooked and recites that the starch and fiber mixture allows the starch to remain on the paper mat and the starch is cooked during the paper making process. As discussed in the Specification and set forth in the amended claims, in this unique and novel starch and fiber mixture, the fiber allows the starch to remain on the mat where it is cooked during further processing. (See, Specification at ¶ 4.) Thus, the uncooked starch and fiber mixture provides more efficient use of the starch as a papermaking additive because the starch is retained in the paper mat where it is then cooked to enhance paper properties.

Matsuda concerns, primarily, a method for making SMF particularly adapted to be a surface coating or a carrier for dye in making printed paper. (See, Matsuda at column 3, lines 55-63). The starch and fiber mixture of the present invention functions to apply starch to a paper mat wherein the fiber allows the starch to remain on the paper mat where it is then cooked during the paper making process. Anticipation only occurs when each element of a claim is expressly or inherently described in a single prior art reference or the claimed invention was known or embodied in a single reference. *Kalman v. Kimberly Clark Corporation*, 713 F. 2d 760, 218 U.S.P.Q. 158 (Fed. Cir. 1983) cert. den. 465 U.S. 1026, 104 S. Ct. 1284, 79 L. Ed. 2d 687 (1984). Matsuda's disclosure

is limited to materials used to coat paper in a paper making process or carriers for dyes in making tinted paper. Matsuda does not expressly or inherently disclose a composition or method of making a composition, such as that of the present invention, as set forth in the amended claims, which is an uncooked starch and fiber mixture, or paper mat comprising such a mixture, wherein the starch and fiber mixture is a means for applying uncooked starch to the paper mat where the starch is then cooked during the paper making process, and the claims are amended accordingly. Thus, the present invention, including the embodiments set forth in Claims 1-8 and 18, as amended, is not anticipated by Matsuda.

Matsuda refers to the combination of the SMF and starch as a surface sizing coating material and the patent refers only to starch and oxidized starch among a myriad of coating materials. (See, Matsuda at column 9, lines 51-60.) In the Examples of Matsuda, only oxidized starch is discussed and that as part of a coating material to obtain coated paper. (See, Matsuda, column 14, lines 26-36). Matsuda does not specifically disclose the combination of fiber material with uncooked starch. Moreover, Matsuda only discloses the combination of the SMF with starch as surface-sizing coating materials or coating materials to obtain coated paper. Accordingly, there is no disclosure in Matsuda of the specific invention set forth in Claim 1-8 and 18, as amended, wherein the fiber and uncooked starch mixture is applied to a paper mat during the paper making process with the fiber allowing the starch to remain on the paper mat and the

starch is cooked during the paper making process. Accordingly, the present invention is not anticipated by Matsuda.

The present invention, as set forth in Claims 1-8 and 18, as amended, is also not obvious over Matsuda. Matsuda's main teaching pertains to the SMF and methods for making the SMF for paper coating materials. Also, the only teaching in Matsuda regarding SMF and starch is as coating materials, and Matsuda does not specifically teach or suggest uncooked starch. Reading Matsuda in its entirety does not provide any teaching or suggestion of the present invention, as set forth in Claims 1-8 and 18, as amended, which involves a fiber and uncooked starch mixture which provides uncooked starch to a paper mat with the fiber allowing the starch to remain on the paper mat and the starch is cooked during the paper making process. The present invention provides for efficient use of starch as an additive to the paper mat in the paper making process. Considering that Matsuda provides no teaching or suggestion of the present invention, as set forth in the amended claims, the present invention, including the embodiments set forth in Claims 1-8 and 18, as amended, is not obvious over Matsuda.

Claims 9-11 and 16 are rejected as being anticipated by or obvious over Matsuda. Claim 9 has been amended to incorporate the limitations of Claims 10 and 12, which are accordingly canceled, and Claims 11 and 16 are dependent from Claim 9. The Examiner indicates that Claim 12 includes allowable subject matter and the limitations of Claim 12 and intervening Claim 10 are written into

Claim 9. Also, the Examiner has not rejected Claim 12 under Matsuda. Accordingly, Claim 9, as amended, and claims dependent from Claim 9, are not anticipated by or obvious over Matsuda and further remarks as to the rejections of Claims 9-11 and 16 under Matsuda should not be necessary. The present invention, including the embodiments of Claims 9, 11 and 16, as amended, are neither anticipated by nor obvious over Matsuda.

At pages 3-4 of the Office Action, the Examiner rejects Claims 9-11 and 15-17 as being obvious under 35 U.S.C. § 103(a) over U.S. Patent No. 5,830,364 to Bleakley ("Bleakley"). Reconsideration and withdrawal of this rejection is respectfully requested.

The Examiner indicates that Claim 12 includes allowable subject matter. As discussed above, Claim 9 is amended to include the limitations of Claims 10 and 12, and to overcome the formal rejection under 35 U.S.C. § 112 (second paragraph). Claim 12 was dependent from Claim 10 which was dependent from Claim 9. Claims 11 and 13-15 are also amended to recite dependency from Claim 9. As amended, Claim 9 recites a papermaking process, and Claims 11 and 13-17 are dependent from Claim 9.

Considering that the Examiner finds the subject matter of Claim 12 allowable over the prior art, and Claim 9 is amended to incorporate the limitations of Claim 12 and intervening Claim 10, Claim 9, as amended, is not obvious over Bleakely. Further remarks by the applicants on this rejection should not be

necessary. A Notice of Allowance of Claims 9, 11 and 13-17, as amended, as well as the other claims pending in the instant Application, is earnestly solicited.

At page 4 of the Office Action, the Examiner rejects Claims 18 and 19 under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,942,087 to Pruszynski ("Pruszynski"). Reconsideration and withdrawal of this rejection is respectfully requested.

The Examiner asserts that Pruszynski shows the mixing of white water containing fibers and starch slurry. On this basis, the Examiner asserts that it would have been obvious to mix the starch and white water at least at room temperature and notes that the claims do not indicate how the mixture is applied to the mat which would include wet end internal addition.

Pruszynski concerns an improved method for using preflocculated starch as an additive in paper and paperboard production. (See, Pruszynski at column 3, lines 33-35). Pruszynski teaches of the use of flocculants in making a starch and fiber mixture. In the present invention, the starch and fiber mixture can be made without the use of flocculants, and Claim 18 is amended accordingly. The ability to eliminate the need for flocculants in the present invention is beneficial in that it reduces or eliminates the need for extra chemicals, i.e. the flocculant, in the papermaking process. (See, Specification at ¶ 24.) Considering that Pruszynski teaches of the use of flocculants to make a starch mixture for papermaking and the present invention does not require the use of flocculants to make the starch and fiber mixtures, Pruszynski teaches away from the present

invention. On the same basis, Pruszynski provides no teaching or suggestion of the present invention. Accordingly, the present invention, including the embodiments set forth in Claims 18 and 19, as amended, is not obvious over Pruszynski.

At pages 4-5 of the Office Action, the Examiner rejects Claims 20 and 21 under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,449,437 to Vikio ("Vikio") in view of Bleakley. Reconsideration and withdrawal of this rejection is respectfully requested.

The Examiner asserts that Vikio shows recovery of fines from a screen device and teaches the reuse of fines in the paper making process. The Examiner further asserts that Vikio discloses either a pressure less or pressurized screen. The Examiner concludes that in the absence of unexpected results, it would have been obvious to use a pressurized screen to recover fines. The Examiner also states that the claimed fiber length is known as evidenced by Bleakley. Regarding Claim 21, the Examiner argues that it would have been obvious to use any pressurized screen.

In Vikio, a coarse fraction of sweetener stock is combined with the white water prior to screening. (See, Vikio at column 2, lines 16-42.) Indeed, in the description of the invention in Vikio and in Fig. 2, a coarse fraction of the sweetener stock is combined with the white water prior to separation. (See, Vikio at column 4, line 62 to column 5, line 11.) Thus, Vikio teaches of the use of coarse fraction of the sweetener stock combined with the white water to achieve

separation. Sweetener stock is described in Vikio as long stock. (See, Vikio at column 1, lines 45-49.)

Claim 20 is amended to recite a method for filtering white water obtained from the formation of a paper mat on a wire screen during a papermaking process that requires a step of filtering the white water from the wire screen in the pressure screen. In the present invention, white water from the wire screen is sent to a pressure screen without the addition of coarse material from a sweetener stock. The only material that may be added to the white water from the screen prior to mixing are rejects from screening the starch and fiber mixture to provide greater economy in raw materials. (See, Specification ¶ 20.)

Vikio fails to teach or suggest a method of filtering white water within a paper making process wherein white water from the wire screen is filtered in the pressure screen, particularly considering that Vikio teaches of the need for the coarse fraction of sweetener stock for separation. Also, the method of the present invention provides several advantages with respect to efficiencies in papermaking and introduction of fibers. (See, Specification at ¶ 20.)

Accordingly, the present invention, including the embodiments set forth in Claims 20 and 21, as amended, is not obvious over Vikio. Also, considering that Bleakely is cited solely for the fiber length, the present invention, including the embodiments set forth in Claims 20 and 21, as amended, is likewise not obvious over Vikio in view of Bleakley.

CONCLUSION

The instant Application is believed to be in condition for allowance. Accordingly, Applicants request a Notice of Allowance of Claims 1-9, 11 and 13-21. The Examiner is invited to telephone the undersigned at (908) 722-0700 if it is believed that further discussions, and/or additional amendment would help advance the prosecution of this application.

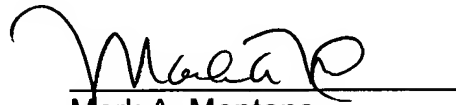
CONDITIONAL PETITION FOR EXTENSION OF TIME

If any additional extension of time for this response is required, Applicants request that this be considered a petition therefor. Please charge the required petition fee to the Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fees, or credit any excess, to the Deposit Account No. 14-1263.

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